

eAfrica

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The electronic journal of governance and innovation

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Agriculture: Persistent Crisis, Present Opportunity

IN ALL regions of the world, hunger, malnutrition and absolute poverty are declining – except in Africa, where an estimated 89 million more people will be living in extreme poverty by 2015, if current trends continue. Once a net food exporter, *Africa's bill for imported food is rising and, the way things are going, its deficit in staple cereal production is expected to triple by 2020.*

Those trends represent a tremendous threat to Africa's social, political and economic stability. It is no accident that the ragtag rebel forces that brought war to Sierra Leone, Liberia, Ivory Coast, Uganda, Sudan and other spots all hailed from the poorest, most marginalised rural areas.

Beginning in the 1960s the so-called Green Revolution brought high-yield seed, fertiliser and irrigation techniques to the developing world, transforming Latin America and Asia from food importers to producers of consistent surpluses.

While commercial farmers in Africa have

followed suit, the majority of farmers who practice subsistence agriculture remain untouched by modern farming techniques.

Therein lies an important opportunity. New high-yield, disease- and drought-resistant strains of rice, cassava and maize offer potential to significantly boost rural incomes. And business is offering promising new models of collaboration to provide small farmers access to high-value export markets, while also delivering the agricultural support services that governments have largely withdrawn.

Two-thirds of Africa remains dependent on the agricultural economy. If those new techniques can be managed effectively and spread far and wide, the continent could realise rapid economic growth.

But the road ahead will not be easy. With little cash on hand and no consistent access to credit, most African farmers feel they cannot risk investing in fertiliser, improved seed or irrigation. Input prices are too high, crop prices too low and rainfall too variable.

Government systems for teaching new methods to farmers have virtually collapsed in most African countries. The most important missing ingredient has been effective management, ignored by many governments.

This issue of *eAfrica* looks at some of the big issues in African agriculture and profiles some important new models of success. –

Ross Herbert



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Ross Herbert – Editor
Kurt Shillinger – Managing Editor
Luleka Manguku – Sub-Editor
Steven Gruzd – Research Manager
Ayesha Kajee – Researcher/Seminar Manager
Antoinette Minnaar – Administrator

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To subscribe:
eafrika-subscribe@saiia.wits.ac.za
Send comments and suggestions to
editor@saiia.wits.ac.za
www.wits.ac.za/saiia

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Verbatim

“If it is not for sale, do not put it on display.” – A Malawian man commenting about women who wear mini-skirts, a fashion that has found its way to the centre of a public debate about democratic liberalisation in a country bound by traditional mores.

“We see clearly that the use of a gun is not the best solution.” – Major General Paul Rwarakabije, commander of the rebel Army for the Liberation of Rwanda, who surrendered to Rwandan government forces in mid-November 2003. The rebels include members who took part in the 1994 genocide.

“They are cutting off people’s heads. Every time we hear of an incident, it’s a new level of brutality.” – Father John Fraser, a priest in Uganda, on the killing of some 60 Ugandans by the Lord’s Resistance Army.

“Now the talk is all about whether Mugabe goes or doesn’t go to Abuja. Let us talk about 700% inflation that is going to visit our country by March next year. Let’s talk about 80% of Zimbabweans that live beyond the poverty datum line. Let’s talk about the terror that average Zimbabweans endure in daily life. Let’s not talk about Mugabe’s invitation to Abuja. That’s a non-issue.” – Paul Themba-Nyathi, an MP from Zimbabwe’s opposition Movement for Democratic Change.

“[Zimbabwean President Robert Mugabe] will not have an invitation. If there is no invitation, they will not come.” – Nigerian President Olusegun Obasanjo, who is hosting the Commonwealth summit.

“President Obasanjo once told me that he’d asked young Nigerian children about their career aspirations. They didn’t tell him that they wanted to be teachers, doctors, lawyers or businessmen. They said they wanted to be civil servants, so that they could drive a Mercedes Benz.” – Dr Peter Eigen, Chairman of anti-corruption NGO Transparency International, in an interview with *eAfrica*.

“Peer Review is a difficult process. It’s designed to create learning and collaboration, not to discipline countries and tell them to stand in a corner. The reviews will help states prevent internal conflict and bring good governance.” – Dr Frene Ginwala, Speaker of the South African Parliament.



“[Progress on international trade] can be made if the negotiations are based on early, concrete and ambitious commitments on agriculture, including reductions in border protection [such as tariffs] and a time-bound phase-out of the various forms of export subsidies.” – IMF Managing Director Horst Köhler and World Bank President James D Wolfensohn, in a joint letter to WTO members.

“We do not think it is necessary for Botswana to join the African Peer Review Mechanism (APRM). We have nothing to hide. Our system is already beyond APRM.” – Dr Baledzi Gaolathe, Botswana’s minister of finance and development planning, at the OECD Global Forum on Investment in Johannesburg.

“On Nepad, Africa has a lot to do to put its house in order.” – Gaolathe, at the same conference.

“The peoples of our continent, the Cradle of Humanity, cry out everyday for a better life of hope rather than despair. And yet millions wake up daily to a life of seemingly unending poverty.” – South African President Thabo Mbeki at the French National Assembly.

“We had a situation where one African leader was going to give a speech – I don’t want to embarrass him by naming him – and a speech was prepared for him where he was urged to encourage the young people and the population to use condoms to protect themselves. He said: ‘I can’t utter the word condom. I’m the father of the nation. You can’t ask me to encourage the youth to be promiscuous.’

I said: ‘This is saving lives.’ I spoke to another African leader who was also entirely against the use of condoms and he said: ‘Mr secretary general, we don’t want to associate you with the word condoms. You shouldn’t even be using that word while speaking about it.’ – Kofi Annan, UN secretary general on the failure of leadership in Africa to candidly speak to the African people about HIV/Aids.

Reviving African Agriculture

The tools to end Africa's looming food crisis exist, but fundamental change is needed in management and political commitment

THE 'Green Revolutions' of Asia, Israel and Latin America demonstrated decades ago that even densely populated arid countries can feed their own – and, in fact, produce a surplus – with proper research, planning and management.

But Africa has missed the revolution while politicians offer a litany of excuses: bad weather, debt, stingy donors, Northern farm subsidies or unscrupulous traders.

These factors are real, but are not, individually or even collectively, the main cause. Africa's food crisis derives from political failure.

By 2020, Africa's population will grow by 70%, which will triple the gap between consumption and production of staple cereals, according to estimates by the UN and the International Food Policy Research Institute. In the 1980s, Asia improved its per capita agricultural productivity by 2.7% per year, while Africa's productivity declined by 0.4% per year.

The only viable way for Africa to break its cycles of famine is for governments to embrace the kind of reforms that other regions of the world did decades ago: aggressive research into high-yielding, drought-resistant crops; integrated national and regional development of water resources, including catchment infrastructure and modern irrigation systems; innovative extension programmes and competitive marketing strategies.

And above all, genuine and sustained support for small farmers. Throwing peasants onto land that they cannot legally own and walking away does not constitute a viable approach to

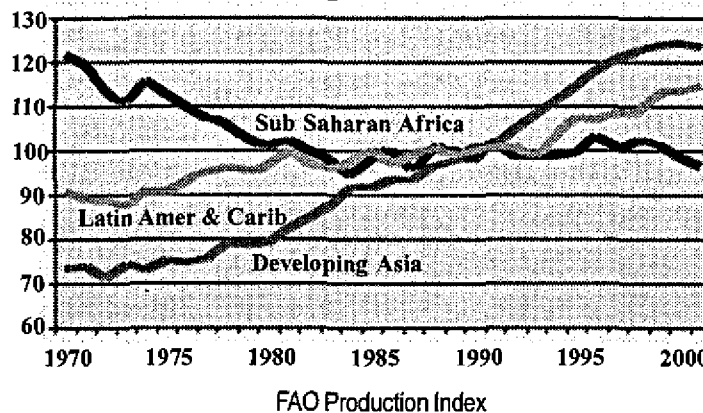
agriculture. There's no mystery to escaping the trap of subsistence. Farmers need credit, ownership of land and access to inputs and education.

While adoption of modern methods is extremely low in the subsistence sector, commercial farmers have shown that farming can be conducted profitably in Africa. Other articles in this issue of *eAfrica* highlight how small farmers, armed with the right tools and given the right support, can thrive despite stiff global competition.

India's increase in grain production was attributable to expanded use of fertiliser.

In 1994/95 Sub-Saharan Africa used only 10kg/ha of fertiliser, compared to 77kg/ha in South Asia and 65kg/ha in Latin America, according to UN Food and Agriculture Organisation statistics. Today, African usage is around 5kg/ha; outside of the commercial sector, usage is frequently non-existent. Irrigation figures are equally stark. Today only 4.6% of agricultural land is irrigated in Africa, compared to 38.4% in Asia.

Per Capita Agriculture Productivity



Africa has sought to keep pace with its growing demand for food by putting more land under cultivation. Total production is up, but output per person continues to drop, which drives farmers to increasingly unsustainable methods. Per-hectare yields are declining, soils are being worn out and the forage available for livestock is being overused.

India, once famine prone but now a consistent food exporter, provides a vivid contrast. From 1965 to 1981, India turned around its agricultural fortunes with four main elements: expanded irrigation, improved seed, fertiliser and pesticide inputs, and a coordinated set of government interventions. Fully half of

The New Partnership for Africa's Development has launched a collaborative effort with various agricultural research bodies to identify and spread such agricultural success stories. The venture highlights Africa's most critical management failure: Agricultural extension services have virtually collapsed in much of Africa or have been debilitated by such operational lapses as lack of fuel or spares for vehicles.

Farmers also fail to adopt new techniques for complex social reasons. At times farmers have simply not seen the success of new techniques with their own eyes. Others have insufficient manpower or capital to risk on experiments or cannot realise the value of high-yields because there is an inadequate market for the surplus. Governments in other continents have found answers, but Africa has so far failed at this most crucial development task.

'Even though subsistence farming is the main source of income in sub-Saharan Africa, no African country has enacted any policies to help subsistence farmers graduate to commercial farming,' said Suresh Babu, a researcher at the International Food Policy Research Institute.

SPECIAL FEATURE

Declining Commitment to R&D

African governments have allowed agriculture to fall far down the priority list. After a rapid expansion in agricultural research in the 1960s and 70s, research institutions experienced stagnation and decline in the 1980s and 90s.

Although the number of researchers (excluding those in South Africa) expanded six-fold from the 1960s to the 90s, the operational resources available per researcher were one-third lower in the early 1990s. In Nigeria, funds for research and development have plunged by nearly half from the 1970s. Today Africa is dependent on donors for roughly 40% of agricultural R&D. Not only have agricultural budgets declined, but high inflation and poor macro-economic management have drastically eroded the value of research salaries.

'The result has been widespread absenteeism in many research agencies as staff work at other additional jobs, and a rather rapid rate of turnover of senior scientific staff,' according to agricultural research specialists Philip Pardey, Johannes Roseboom and Nienke Beintema.

According to one study, Africa spent about 5% of its aggregate government budget on agriculture in 1998, compared to 10% in Asia and 3% in Latin America. The most dramatic difference in spending patterns is the 57% of African government budgets spent on unidentified 'other', compared to 32% in Latin America and 47% in Asia.

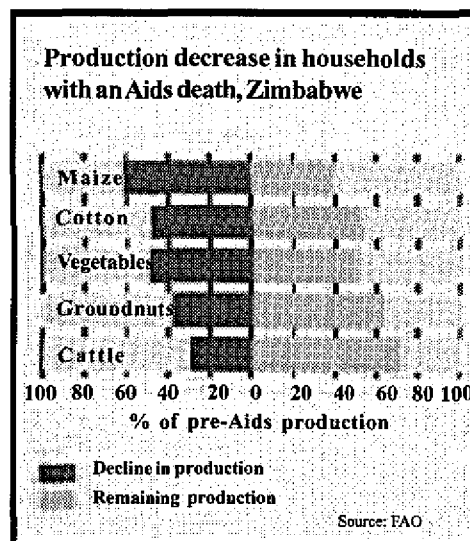
Over the past two decades, two-thirds of African countries registered a decrease in agricultural spending as a percentage of agricultural GDP. Despite all its rhetoric about land reform, Zimbabwe plans to spend three times as much on defence and policing in 2004 as it does on agriculture.

Although agricultural extension, R&D and higher education all ought to work together, they are often managed by different ministries and on the donor side, administered by different units. As

a result, out of \$4.8 billion spent by the World Bank on agriculture from 1987-97, 98% went to research and extension, while agricultural higher education received only 2%. While governments were eager to import approaches to agricultural extension programmes, they failed to tailor them to their particular needs.

Agriculture Needs Good Governance

Although agriculture is usually thought of in terms of a single government ministry, its success or failure is determined by the combined effectiveness or ineffectiveness of many other



By 2020, Aids will have claimed more than one-fifth of the agricultural labour force in most southern African countries. Already, 60-70% of farms have suffered labour losses as a result of HIV/Aids.

government endeavours. Mismanagement and neglect of roads and rails directly contribute to Africa having the world's highest farm-gate prices for fertiliser, seed and other inputs. Mismanagement, excessive complexity and corruption at ports and border crossings slow down trade, drive up costs and extend the time that trade goods must be financed. Failure to reinvest in state telephone companies drives up the cost of communications, making exports next to impossible except for large agribusinesses.

Farmers Pay the Cost of Fiscal Failure

Fiscal irresponsibility, meanwhile, drove countries to deficits, serious inflation and currency depreciation. While painful to formal sector business, inflation and depreciation arguably had their most pernicious effect on the rural poor by driving up prices, destabilising calculations of expected returns and making it financially impossible to access credit.

In Ghana, cocoa farmers took home 89% of the world price for cocoa in 1949. A concerted policy of heavily taxing cocoa and forcing farmers to sell at grossly unrealistic exchange rates meant that by 1983 they received only 6% of the world price. Similar efforts in Côte d'Ivoire led to bloated, overpaid coffee and cocoa trading monopolies while farmers were reduced to penury.

Governments further subverted the rural economy by politicising the distribution of farm inputs and credit, which were dispensed in efforts to buy votes. By frequently forgiving loans, governments helped bankrupt agricultural marketing boards and credit agencies but also subverted the incentive for the private sector to step into the void.

Corruption has been a major force working against agricultural progress. Programmes to subsidise fertiliser or distribute seed packs have routinely been exploited by politically-connected traders who sell the discounted goods into non-subsidised markets. Politicians have warped market prices and thus undercut production by giving away food during election seasons. Not only does corruption divert agricultural inputs, it also debilitates effective management, drives up prices for infrastructure and leads to shoddy work that causes frequent washouts of roads. In Malawi, where government sold off its grain reserves just as famine struck in 2001, government estimated that 'almost a third of government revenue is stolen annually by civil servants'.

Over time, governments have ceded more and more initiatives to donors,

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which has warped the fundamental decision-making processes of government. Aid is supposed to serve as an incentive to reform. But more often it has the opposite effect of delaying or limiting reform, by lessening incentives for governments to do what markets would demand be done quickly.

In an assessment of the international agriculture research system, Carl Eicher and Mandivamba Rukuni observed that 'the ready availability of foreign aid served as an "escape valve" for many administrators of NARS (national agricultural research services) who were reluctant to make hard scientific and financial decisions on the number of scientists and support staff, number of commodities, size of commodity research teams, number of research stations. [Rather], emphasis was placed on expanding the size of NARS to the extent that there were many research facilities and researchers "without programmes".'

Political Dysfunction

Why is it that French, American and Japanese politicians lavishly cater to the needs of their farmers – who represent less than 2% of their populations – yet in Africa, agriculture is consistently neglected?

Indian famine researcher and Nobel laureate Amartya Sen wrote: 'No famine has ever taken place in the history of the world in a functioning democracy... Authoritarian rulers, who are themselves rarely affected by famines, tend to lack the incentive to take timely preventive measures. Democratic governments, in contrast, have to win elections and face public criticism, and have strong incentives to undertake measures to avert famines.'

The operative phrase in Sen's analysis is 'functioning democracy', which implies a rich commitment by elected leaders to look after the interests of citizens. Leaders in non-functioning democracies look first to deny blame and suppress unpleasant truths. As famine crept across Southern Africa last year, Zimbabwe, Malawi and other governments consistently denied that there

were any shortcomings in their preparations for the predicted food shortages. Once the manifestations of critical food shortages fully set in, politicians blamed speculators and hoarders and did little to diagnose the nature of their own mismanagement.

Accepting Responsibility

India, which is far less donor-dependent than Africa, again offers a compelling contrast. It has approached famine prevention in a holistic way. It created effective systems to forecast shortages and deploys a variety of techniques, including make-work schemes, food distribution and assistance with irrigation and inputs to head off disasters.

One reason Indian politicians have been so responsive is that peasants long ago asserted themselves through famine riots and protests. Politicians then accepted as an iron-clad obligation that they must anticipate and tend to the needs of citizens. African leaders, in contrast, have accepted no similar responsibility.

Although African governments engaged in a flurry of efforts to assist the rural poor in the 1960s and early 1970s, they failed to stick to that commitment when budgets grew tight and hard choices had to be made. Africa's farmers are poor, poorly organised, and poorly informed, so they do not know the extent to which their interests are neglected in distant capital cities. African governments have sought to maintain that ignorance through media censorship and agricultural programmes meant more to bribe rural voters than deliver real progress.

That must change. Africa's future depends on improving food security. Agriculture must be made a central pre-occupation of not only the agriculture ministry but also those responsible for roads, ports, trade, customs, education and national finance.

In its *State of Food Insecurity in the World 2003*, released last week, the UN Food Agriculture Organisation declared: 'Bluntly stated, the problem is not so much a lack of food as a lack of political will.' – **Ross Herbert**

Crisis in the Soils

AMONG the many factors limiting Africa's agricultural production, declining soil fertility is one of the most crucial and under-appreciated.

A study by the UN Food and Agriculture Organisation estimates that up to 24 kilograms of key soil nutrients are lost per hectare per year in Africa. The Global Assessment of Human-Induced Soil Degradation study, conducted by the UN Environment Programme, estimates that 26% of dry-land Africa suffers from various degrees of soil degradation.

Experts warn that unless greater investments are made in research and extension services focused on revitalising the loam through improved fallowing and other innovative practices, Africa's food crisis will deepen.

Soil erosion is usually accompanied by other problems such as deteriorating soil structure, reduced moisture-retention capacity, and soil-nutrient depletion. The depletion of nutrients – nitrogen and phosphorous in particular – has caused crop production to stagnate or decline in many African countries. About 16% of all soils in Africa are classified as having low-nutrient reserves, compared to only 4% in Asia. Moreover, fertiliser productivity (expressed in terms of maize yield response) in Africa is estimated at 36% lower than in Asia and 92% lower than in developed countries.

Individual countries have started pilot programmes to reverse soil decline. Working with the private sector, donor communities and small-scale farmers, Zambia has a conservation farming system that uses new, minimum tillage methods that improve water infiltration and retention and help root development.

On the Central Plateau of Burkina Faso, where cereal yields had fallen to less than half the continental average for subsistence cultivation and water tables were falling by a meter a year during the 1980s, farmers adopted a new, checkerboard approach to planting that concentrated growing in small squares and allowed for greater periods of fallowing. Such strategies have helped reverse the trend of decreasing yields and give rise to cautious optimism. – **Michael van Winden**

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Venture Capital Jumpstarts Emerging Ag Businesses

PETER Nyathi was once a top grower at one of South Africa's largest mushroom companies. He has an honours degree in agriculture and years of practical experience, and completed additional study of production techniques in Holland. Moses Singo turned a state-owned flower farm from loss to profit in two years. He has two advanced degrees – one in agriculture, one in business – and years of practical experience in export trade.

But when the two men went off to start their businesses, they ran into the classic hurdle that obstructs almost every budding entrepreneur in Africa: Without financial assets, their technical knowledge and management experience counted for little in credit applications, and neither man could obtain a bond to buy his own farm.

'Financial institutions could not get beyond the basic problem of doing business with someone who can't put down a deposit,' said Nyathi, who founded the Tropical Mushroom company. He spent a year banging on doors at South African financial institutions – the Land Bank, ABSA, Standard Bank, the Development Bank of Southern Africa, the Industrial Development Corporation, the International Finance Corporation and the Africa Project Development Facility.

A critical challenge in African development involves moving the continent beyond being a perennial global supplier of raw commodities. What's needed, analysts say, are new financial models that nurture entrepreneurs who have ideas, job

experience and education – whether formal or informal – but little in the way of capital or collateral.

'African countries need to move away from just asset-based lending to models that account for the fact that, while people may have the skills to run successful businesses, they don't have the capital to start up a business,' said Wendy Clements, a senior manager of the global accounting firm Deloitte Touche Tohmatsu, which has been involved in helping to establish black empowerment mechanisms in South Africa.

Nyathi and Singo found the financial lifelines they needed in Equity Africa, a South African company that funds emerging African businessmen by investing as shareholders in joint ventures. While lenders take a hands-off, collateral-based approach, Equity Africa as a venture capital firm, offers active assistance and technical advisors to help start-ups succeed.

Most institutions manage credit according to developed world models, said Piers Kenyon, a director at Equity Africa, but that approach is seldom appropriate in Africa. 'The reality of Africa is that most people don't have assets to secure a loan,' he said. 'Many, however, have the entrepreneurial skills, experience and the education to become commercial operators – provided they can get funding.

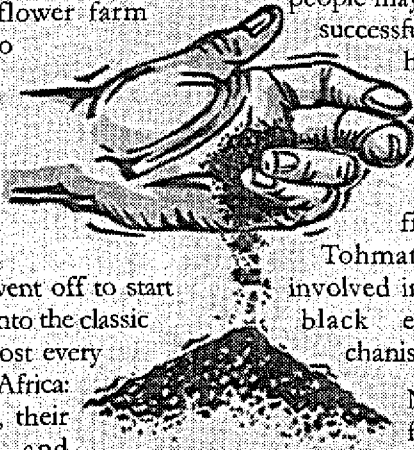
'We assess an applicant's credit risk on the strength of his technical and business knowledge, management expertise and previous professional successes. From that basis, we calculate the shareholding the entrepreneur will hold in his venture, which is substantial enough for the entrepreneur to still have a say in his business,' Kenyon said. Shareholding and management agreements also help to offset risk.

Partnering with Equity Africa enabled Nyathi and Singo to establish competitive black-owned commercial enterprises in sectors previously dominated by white- or foreign-owned big businesses.

Nyathi obtained start-up capital in 2000, bought a 19-hectare farm northwest of Johannesburg and built facilities that he designed himself – including composting rooms, growing chambers, packing stations and cold storage. The agency brought out a Dutch mushroom expert, Petrus van der Brugt, to help Nyathi design the facility and sent key Tropical Mushroom staff to the Netherlands for training.

Today, Tropical Mushrooms produces an average of four tonnes of premium organic mushrooms a year and supplies two major national grocery chains and a number of smaller retailers. Earlier this year, the company was nominated by the Africa Centre for Investment Analysis as the Best SMME in Africa in a pan-African competition initiated by the University of Stellen-bosch.

While Nyathi has a substantial minority shareholding in the company, the terms of his partnership with Equity Africa allow him to buy out more of the



'The reality of Africa is that most people don't have assets to secure a loan'

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company once he has paid off his loan.

Singo's story is similar. Having secured funding from Equity Africa in 2001, he bought a 10-hectare farm outside Pretoria and started SingoFlora, South Africa's first and only black-owned foliage producer. The agency flew in another Dutch specialist, flower expert Jan de Jong, to help Singo develop an effective strategy to penetrate European markets. Singo is striving for a 50% export ratio, and has found buyers in the Netherlands for *asparagus meirri* seeds, which he produces.

A Business Blooms

Success gets noticed. Singo has since received funding from the South African department of trade and industry to research marketing opportunities. Last year he was named ABSA Farmer of the Year and is currently a board member of South Africa's Agricultural Research Council.

'I first had fears that as a black grower I would be marginalised,' he said. 'Fortunately, that never happened: most white commercial companies buy from me, as I have good quality products.'

Equity Africa also leveraged funding from the US Agency for International Development to contract Deloitte to help both farmers set up staff empowerment trusts to enable employees to become shareholders in the companies.

The Equity Africa approach to financing has limits. Because it leaves the entrepreneur with only a minority interest in the joint venture, he faces a steep climb in making the business his own. Few subsistence farmers have either the drive or the technical expertise that have enabled Nyathi and Singo to succeed. In most cases, said Wolfgang Thomas, an economics professor at the University of Stellenbosch in South Africa, micro-loans and government- or donor-funded projects are more appropriate responses to the needs of emerging farmers.

Nonetheless, Thomas said, 'this approach to financing not only deserves a lot of

attention but should be encouraged. Even if only a few thousand individuals of the calibre of Nyathi and Singo are identified in Africa, this can make a huge difference. Such people, if they are given the chance and the assistance to succeed, become engines of growth in their own communities because they can create employment. This is exactly the kind of entrepreneur you need to change the perception that Africans can't be successful farmers'. SingoFlora has created 34 jobs and Tropical Mushrooms

57 jobs in rural areas.

The Equity Africa approach can also be important in repatriating African professionals who have gone abroad to gain work experience and seek skills, but lack sufficient assets and credit to start businesses back home, Thomas said.

Kenyon challenges criticism that the Equity Africa approach has limited range because it requires the kind of highly developed financial infrastructure that many African countries lack. Banks and international funding agencies already in place, he said, 'need to be convinced to change the way they do business. Instead of using financing models created in the developed world that are premised on extending credit against collateral, Africa needs to design credit models more suited to its realities.'

Clements agreed. 'There is often the misconception in Africa that all people who are unemployed want jobs,' she said. 'This overlooks the fact that there are people who have the vision and entrepreneurial skills to run their own businesses. You need different funding policies to assist such individuals'.

Cultivating Local Talent

A Ian Stokes, another director of Equity Africa, argued that African countries should consider the empowerment charters emerging in South Africa.

'Africa needs more than big development projects or foreign investment by overseas companies that simply create local jobs,' he said. 'It needs locals to move up and become commercial operators and employers in their own right.'

'African countries should use charters to compel foreign-owned companies to employ locals in positions where they can acquire the skills either to run their own businesses profitably or to fill senior positions in the company,' Stokes said. 'As in Nyathi's case, he acquired the skills to run his own business when his previous employer, aware of pending empowerment charters, recognised the importance of training staff that would previously have been sidelined.' – Julia Kupka

Don't forget the basics

FINANCE alone won't ensure the success of new businesses started by previously disadvantaged entrepreneurs in South Africa. This is the conclusion of the Global Entrepreneurship Monitor (GEM), a US-based international research programme that annually assesses the level of entrepreneurial activity in countries worldwide.

In its latest annual report, GEM found that, of the black-owned businesses they surveyed in South Africa, 45% showed signs of cash distress. Of these, up to 74% had exhausted their overdraft facilities within their first six months of operating.

The report concluded that more emphasis should be placed on correcting the underlying finance management weaknesses in these businesses than on providing extra funding. A few simple financial practices were found to substantially reduce the probability of cash distress. These included keeping a cashbook and records of accounts receivable and inventory, and performing proactive debtor management.

Implementing any one of these practices saw at least a 33% reduction in the probability of an exhausted overdraft. Adopting all four practices appeared to reduce this probability by 61%, according to the reports' authors Canna Fischer and Eric Wood, both of whom are from the University of Cape Town.

SPECIAL FEATURE

Outgrower Schemes: Linking Small Farmers to Exports and Expertise

EIGHT years ago Chipata wasn't much of a town – just a final sleepy hamlet in eastern Zambia on the road toward Malawi. Now it's buzzing.

What brought the change? An approach to agriculture called outgrower schemes or contract farming, in which large-scale commercial processors form partnerships with small farmers. The idea is simple: The big guys provide inputs, credit, technical support and – critically – markets for the little guys, ostensibly filling a growing vacuum left by fiscally-strained governments.

Although not a new idea, such partnerships have become increasingly prevalent across the developing world as governments, hobbled by economic reform programmes mandated by international lenders, scale back or abandon rural poverty-reduction programmes.

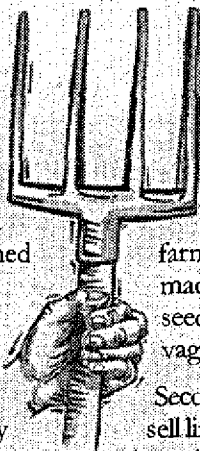
When the South African farming giant Clark Cotton arrived in Chipata back in the mid-1990s, gum wrappers were more common than jobs. The company provides farmers with seed, chemicals and equipment on credit, and buys their crops, automatically recouping input loans. Today there are 56,000 contract growers working for Clark in Zambia producing about 60,000 tonnes of cotton a year. The system benefits 10 times as many people by helping family dependents and offering seasonal harvest jobs. To keep up with the growth, the company has built two new ginneries.

From Subsistence to Commercial

This brings R100 million worth of income into the area every year where there was none before,' said Trevor Wilkinson, Clark's managing director.

'Prospective farmers need access to finance, technology, markets, infrastructure and

high-cost farming inputs,' said Dr Kurt Sartorius, who was part of a four-year research team at the University of Pretoria. 'Without these, it is like giving an individual 50 hectares of land and a shovel and telling him to become a commercial farmer.'



Subsistence farmers face a double challenge when trying to turn commercial. Firstly they are trapped in a subsistence farming system that is increasingly unviable. Desperately short of capital, most African subsistence farmers cannot afford fertiliser, farm machines or high-yield commercial seed, and they are dependent on the vagaries of rain.

Secondly, subsistence farmers can only sell limited amounts to local buyers. In the wake of structural adjustment, many state agricultural boards have collapsed or have such poor finances they no longer pay cash on delivery. Limited by poor infrastructure and lack of information, farmers have neither the contacts nor access to reach buyers in the developed world who pay top prices.

Large-scale commercial farmers can afford specialised production, storage, packaging and transport techniques so that they can meet the demands of fussy consumers. But most subsistence farmers lack the capital and the skills to research and negotiate with demanding markets.

Contract farming is supposed to help small-scale farmers overcome these difficulties. And in many cases it does. Formally linked to large agribusinesses, small producers gain access to skills, inputs like seed and fertiliser, credit, information about quality and health requirements and, ultimately, buyers.

The larger member of the partnership gains as well. Because it is no longer possible for agribusinesses to acquire large tracts of virgin land to run vertically integrated operations, companies involved in a growing number of commodities – coffee, cotton, flowers, tobacco, grain, citrus and tropical fruit – are forging contract networks.

Balancing Efficiency and Development

But an increasing body of evidence suggests that, in fact, large processing firms prefer working with larger-scale farmers rather than small rural ones.

'Contracting with smaller growers generally involves high transaction costs and, under most circumstances, agro-industrial firms will prefer to contract with larger growers,' concluded Matthew Warning of the University of Puget Sound and Wendy Soo Hoo of the University of Washington in a study.

When an outgrower scheme focuses on a product where demand exceeds supply, agribusinesses have an incentive to keep farmers happy. But this is not always the case. Sugar, coffee and tea processors have long been running outgrower schemes. But as global prices have declined, market power shifted to buyers, leaving outgrowers with no choice but to accept falling prices.

'Most subsistence farmers can't afford fertiliser, farm machines or high-yield commercial seed'

The decision to launch an outgrower scheme rests with business, but government can do a lot to facilitate such operations and encourage collaboration with smaller farmers

by creating the right legal, tax and infrastructural environment. Nile Breweries Limited (NBL), for example, runs one of the most successful outgrower schemes in Uganda as part of a national poverty-eradication programme.

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The NBL contract-farming programme utilises a high-yielding drought-tolerant, weed-resistant strain of sorghum developed by Ugandan researchers and NBL. Today, about 4,500 farmers produce 5,000 tonnes of the variety, called epuripur, every year. 'The scheme injects 1 billion shillings (\$500,250) into a small region each season,' says Edward Ojulu, business editor at the Ugandan publication *Money Monitor*. 'The project is also creating linkages and stimulating consumption in the area. Both food security and incomes have improved.'

One way of reducing the high administrative costs of doing business with small-scale farmers is to group the farmers into cooperatives that contract on their behalf with agribusinesses. The Fresh Produce Exporters Association of Kenya, for example, organised farmers into groups of 20 that, in turn, are given information, inputs, technical and quality assistance. They are also trained in integrated crop management systems, hygiene, pesticide use and record keeping.

Another way is for governments to grant tax relief to companies that deliver social benefits to rural communities, in addition to buying their produce.

Encouraging Collaboration

The NBL, for example, was granted an indefinite tax break for so long as it sources all the epuripur it needs from small-scale farmers. As a result, NBL has turned down large organisations interested in growing epuripur and is helping the smaller farmers form groups to raise a minimum of at least 30 acres of land. Up to 60 groups, each with at least 20 farmers, have been registered.

Another risk agribusinesses face is that of farmers breaking their contracts, either because of production failure or because they sell their produce to competing buyers. This risk is increased if there is an absence of effective legal systems and smallholders have little collateral as security for inputs they get on credit from the agribusiness.

Clark Cotton overcame these problems by gradually increasing the assistance it

gives farmers in accordance with farmers' performance. 'When a new contractor joins, we give him only the seed he needs on credit,' Wilkinson said. 'He is also visited by our extension agents to help him with production during the season. We record a contractor's performance and, as he honours his contract, we increase his credit.'

Community Credit

The World Bank's Natural Resources Institute says farmer default can be reduced if the agribusiness provides inputs and services through groups of smallholders who are jointly liable for the debt.

The advantage of this tactic is that farmers also have information on the creditworthiness of community members that an agribusiness probably would not have. The group is, therefore, able to screen out potential defaulters.

Legislation can provide another buffer against risk. British American Tobacco (BAT) was once the main agribusiness contracting with small-scale farmers in Uganda. Then, in 1996, the Ugandan government invited the African company Mastermind to also contract with small-scale farmers. When Mastermind found the industry was monopolised by BAT, it began offering farmers higher prices and agreed to cover the costs of the BAT inputs.

A crisis resulted. Not all the monies paid out by Mastermind reached the farmers, for one thing, and BAT failed to recover loans worth \$200,000. In response, Uganda amended its Tobacco Law to safeguard farmers and companies in agribusiness relationships. The law requires each side in a contractual arrangement to honour their commitments. By 1998, BAT was recovering its loans in full and contracting with 48,000 farmers.

Exclusive relationships with farmers enable agribusinesses to achieve far higher credit collection rates. In Zambia, the private cotton companies achieve credit collection rates around 85%, compared to 20% under state-run schemes. — Julia Kupka

Briefly

Taylor's price tag: Security around former Liberian president Charles Taylor has been beefed up in his exile home in Nigeria, following a US offer of \$2 million for the capture of 'an indictee of the Special Court for Sierra Leone'. Taylor's hosts, the Nigerian government, criticised the bounty as state-sponsored terrorism. South Africa denied claims that its taxpayers are supporting Taylor with \$1 million a year.

Election locked up: Guinea arrested dozens of soldiers in the capital, Conakry, just weeks before 21 December presidential elections that are already boycotted by opposition parties. Guinea's President Lansana Conte seized power in 1984 and changed the constitution in 2001 to allow him to run for a third term.

Funds unfrozen: Kenyan President Mwai Kibaki's fight against corruption was rated strong enough by the International Monetary Fund to release a \$250 million loan, reversing a three-year aid freeze.

More of the same: Mauritanian President Maouiya Ould Taya, in power since 1984, claimed 67% of the vote to beat five other candidates in November elections. His main challenger was arrested just before the vote on suspicion of plotting a coup, and was arrested again shortly after the results were announced.

Law flaw: Zambia's fourth attempt in 39 years to develop an acceptable constitution has been criticised for allowing President Levy Mwanawasa too much influence. In a strongly-worded letter, Roman Catholic bishops demanded that a civil society conference and not parliament should adopt the constitution, to prevent presidential meddling.

Signs of War: Eritrea has withdrawn its ambassador to the African Union. This was in protest against the AU's inability — along with the UN — to enforce peace agreements with Ethiopia, which rejected the decision of an international boundary commission to award to Eritrea the key border town of Badme. The dispute sparked the 1998-2000 border war that killed about 80,000. UN sources reported that the situation is extremely tense as Eritrea has begun moving troops towards the disputed area.

SPECIAL FEATURE

New Niche for African Nibblers

Contract farming enables rural shepherds to sell their goats in Middle Eastern markets

GOATS are a delicacy in the Middle East. Africa has plenty to spare. The proximity of demand and supply implies an obvious marriage of economic convenience.

But penetrating the souks of southern Mediterranean cities has been difficult for African goatherds because Brazilian and Australian farmers keep Cairo and Marrakech hoof-deep in cheap feral livestock. It wasn't until he stuck his head in a roasting pit that Andre Hendriks, a South African, found the solution.

'The Middle East wants carcasses small

enough to fit into an oven, as goats are traditionally cooked whole,' said Hendriks, chief executive officer of Kalahari Kid, a goat exporting company. The scrawny indigenous animals raised by rural farmers in the arid areas of southern Africa, he said, are ideal for this market.

But solving one problem gave rise to another: How to get small-scale rural farmers to supply an overseas market that demands meat of a consistent quality and sanitation. Hendriks found the

answer in contract farming. By organising small-scale herdsmen into cooperatives and imposing specific standards, he could satisfy Middle Eastern buyers. In return, the farmers get what amounts to an agent, since Kalahari Kid handles all the marketing.

'Isolated farmers are very vulnerable,' said Merida Roets, a South African goat specialist who developed a model for commercialising indigenous livestock through contract farming at the University of Pretoria. 'Because they can't determine the going rate for their product or find a reputable buyer, much less get transport to decent markets, they often sell low to the first buyer.'

All Kalahari Kid producers are grouped into cooperatives. This changes farmer groupings from amorphous communities into recognisable legal entities. The company can then assure clients its products can be traced back to the supplier if there are problems. Twenty cooperatives are already up and running, just a year after Hendriks started. Another 63 have been planned in the Northern Cape province of South Africa.

Cooperatives also provide a legal structure through which Kalahari Kid can liaise with government and banking officials on behalf of the herdsmen. Company officials visit the cooperatives regularly to give technical advice. All Kalahari Kid producers have production manuals that detail how goats should be reared, fed, treated if ill and branded.

The cooperatives attract other benefits as well. In the Northern Cape, government's Primary Agriculture Education and Training Authority has provided about \$125,000 to train farmers in goat management, book-keeping and marketing.

The Lure of Labels

FIVE years ago, a South African grocery chain devised a new strategy for selling meat. Branding its lamb shanks and chicken breasts 'Country Reared', it sent a message to consumers that these products were free of growth stimulants like steroids and hormones. The idea was simple: wholesomeness sells. And it worked. Meat sales spiked.

Name branding is becoming increasingly important in helping African farmers escape the 'commodity trap'. Because commodities undergo very little value-adding – processing, packaging or other enhancements that distinguish them – before they are sent to the market, building customer loyalty is difficult.

'Branding in rural areas is underestimated,' said Merida Roets, an agricultural marketing expert in South Africa. 'Many people think you can sell rural products with a story – a label that says 'this was made by Nomsa sitting under a baobab'. But this appeals only to people's compassion to get them to buy the product the first time. Only a brand that assures consumers of consistent quality can keep customers buying a product by seeking out the brand.'

According to Jeremy Sampson of

Interbrand Sampson in Johannesburg, branding works on two levels: visually – through distinct packaging; and psychologically – through trust. Consumers come to associate labels with reliability.

Branding also gives products more global appeal. The California brand Sunkist, for example, is almost universal. Launched by cooperative growers more than a century ago, the brand sells millions cartons of juice annually around the world. With technological advances, the brand has expanded to include value-added products such as marmalade and orange-flavoured prunes. Once brand loyalty is established, the Sunkist experience demonstrates, it transfers to all products that carry the name.

'Africa should concentrate more on supplying its indigenous products to the world than trying to imitate the production of goods developed in the First World,' Roets said. 'We have interesting food – bambara nuts and cassava, for example – that can be exported. The European Union and the United States love products from Africa. But unless they are packaged correctly, with hygiene sureties, you can't tap into those markets.' – Julia Kupka

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'Such government support is vital because it finances Kalahari Kid's people-development side,' said Roets, who now works for Kalahari Kid.

The government has also invested about \$150,000 in the Northern Cape towns of Prieska and Calvinia to develop a goat-leather craft industry so farmers can expand their economic opportunities beyond the selling of meat to Kalahari Kid.

Hendricks chose the name 'Kalahari Kid' because it is unequivocally African. The company has an entire division devoted to marketing, since negotiating in the Middle Eastern markets is so time-consuming. 'It's very rude in the Middle East to launch immediately into business dealings,' Roets said. 'You must first chat and drink lots of coffee before starting business. Also, people work very different hours. So you need to spend time there.'

So far, Kalahari Kid has sold consignments to nine Middle Eastern countries. It has also identified markets in the United Kingdom and China. The goats are also sold locally in South Africa, and the company has been approached by governments in Botswana, Kenya, Namibia, Nigeria, Malawi, Uganda, Swaziland, Reunion and Mauritius to set up similar contract farming cooperatives in those countries.

Punctuating its success, the Kalahari Kid brand has been mooted as a Nepad success story.

'Many of the meetings we have had with African governments have also been attended by aid agencies like the US Agency for International Development and GTZ,' Roets said. 'Funders are very interested in contract farming cooperatives such as Kalahari Kid's because they are linked to markets. It assures them their funding will have a lasting impact. Anybody can give business courses to or develop infra-structure for small-scale farmers, but people will only benefit if there is a market where they can sell their produce.' – **Julia Kupka**

Water Scarcity Requires New Farming Strategies

SUB-SAHARAN Africa's agricultural production is expected to shrink 23% in the next 20 years as a result of 'inevitable' severe water shortages. Resulting 'water wars' – increasing competition for scarce resources – will also leave an estimated 831 million people thirsty and even poorer than they are today, warned scientists at a *Consultative Group on International Agricultural Research* conference in Kenya in late November.

The conference brought roughly 200 of the world's top agricultural scientists from 16 independent research organisations together as part of a wider attempt to make food production more water-efficient by linking civil society and research institutes. Speakers warned of catastrophic consequences unless African governments urgently change their current water-use strategies.

Predictions by the Consultative Group echo findings by the UN Food and Agriculture Organization (FAO), which last year warned that 'while there is no global water crisis, the serious water and food security problems in some developing countries and regions need to be urgently addressed. If we want to avoid a future food crisis, we need more investments to achieve productivity gains in agriculture in developing countries using existing and new technologies.'

The key to producing more food with less water, participants at the conference said, lies in tailoring the choice of crops to the areas in which they grow. 'Let crops that can grow in arid areas do so,' said Isaya Sijali, an irrigation specialist at the National Agriculture Research Laboratory in Nairobi. 'If it is a wetland, concentrate on crops that do well there. Then let there be mutual trade at local or regional level.' Sijali added that new technologies must be developed to monitor the water intake of plants. 'If one can quantify how much water is used per crop, farmers can concentrate on varieties that require less irrigation.'

Frank Rijsberman, Director General of the International Water Management Institute in Colombo, Sri Lanka, told delegates at the conference that 'instead of striving for water self-sufficiency, water-short countries should import food from water-abundant countries'. His suggestion drew criticism from Ely Wamari, a Kenyan agricultural economist, who feared that such an approach would pave the way for sub-standard produce to be sold in Africa.

'We should not just accept this blindly, because even food that is not fit for human consumption will find its way to the continent,' he said, emphasising the importance of indigenous knowledge about food production. 'In the traditional setting, there are certain methods that were used to ensure high yields, and they worked. Replanting of original seeds must not be forgotten.'

Other specialists say the answer to water shortages lies in intensive water harvesting. 'During heavy rain seasons, it is important for as much water as possible to be trapped for future use,' said Peter Ambenje, assistant director of forecasting at Kenya's meteorological department.

Ambenje also indicated the importance of early warning systems, citing Kenya's experience during droughts in 1994 and 2000. During the latter dry spell, advance meteorological data enabled the government to adopt measures that limited the negative impact.

The conference also highlighted the need for more investment in agricultural infrastructure in African countries, including modernised irrigation and networks of small water catchment systems.

Looking forward, the Consultative Group's Challenge Programme on Water and Food will study water use along nine of the world's major rivers, including the Nile. About \$60 million has already been pledged to the six-year research project. – **Joyce Mulama, Africa Media Online**

SPECIAL FEATURE

Less Land, Higher Yields: Drawing Lessons from India

FORTY years ago, food experts predicted serious famines in Asia and Africa. Asia defied the doomsayers. Today, India has about 60 million tonnes of grain stocks – enough to maintain minimum food-security reserves and also supply a vast public distribution network. China, Vietnam and Bangladesh, also once regarded as unable to feed themselves, have made similar progress.

But Africa hasn't. Once a food-exporting region, the continent has been a continuous net food importer since the 1970s. Why? Since India was in the same position 35 years ago, it is useful to draw lessons from the sub-continent.

In 1942-43, a severe famine resulting in nearly three million deaths prompted Jawaharlal Nehru, India's first post-colonial prime minister, to remark: 'Everything else can wait, but not agriculture.' Under his leadership, India initiated land reform, expanded irrigation facilities and boosted research and the production of inputs – particularly seeds and fertilisers.

In the decades that followed, drawing on pioneering work done elsewhere in Asia, the US, and Mexico, India developed new, high-yield strains of wheat and rice that increased per-hectare tonnage significantly. The country also accelerated the manufacturing and use of mineral fertilizers and expanded the total field area under irrigation.

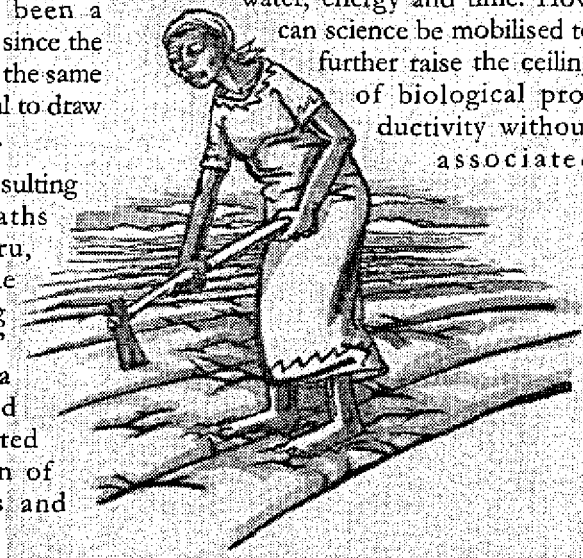
More in the Barn

From 1963 to 1974, the total area under cultivation with high-yield varieties of wheat rose from four hectares to 4 million hectares. In short order, a small state programme became a mass movement, a 'green revolution.' Wheat

production rose from 10 million tonnes in 1964 to 17 million tonnes in 1968.

The world faces several new problems. With the shrinking of land and water resources for agriculture, there is no option but to produce more food and other farm commodities from less per capita arable land and irrigation water.

The need for more food has to be met through higher yields per unit of land, water, energy and time. How can science be mobilised to further raise the ceiling of biological productivity without associated



ecological harm?

For agriculture to remain sustainable, it is important that increased productivity be rooted in the principles of ecology, economics, social and gender equality, and job growth.

In Africa, drought, deforestation, over-grazing, over-cultivation, poor irrigation and unscientific land-use practices accelerate desertification, which now threatens 40% of the continent's land surface. The fragility of soils, diversity of crops and pests, variability of climate and scarcity of water characteristic of many countries south of the Sahara necessitate ecologically sound technologies adapted

to local socio-economic conditions. Only six countries account for 70% of all irrigated land in Africa.

Malnutrition, primarily a rural problem, is rising in urban areas due to unplanned migration of the rural poor. In the mid-1980s, sub-Saharan Africa was the only major region of the world whose population growth rates were still increasing while per capita food production was declining. Rising human populations with expanded food needs put great pressure on the stabilising elements of ecosystems, such as perennial vegetation, water tables, stream flows and fertile soil profiles.

A Holistic Approach

Sustainability in agriculture has to be viewed from ecological as well as social and economic angles. We cannot allow depreciation of basic agricultural assets such as land, water, flora and fauna. At the same time, economic sustainability is vital to generate the interest of farmers in increased production, and equity in both gender and economic terms is important to avoid social disruption. To succeed in achieving ecological, economic and social sustainability, economists, biologists, social scientists and policy-makers must work together as a team.

Early on, India built a scientific infrastructure to stimulate and sustain rapid agricultural advance. The Indian Council of Agricultural Research (ICAR) supports and coordinates scientific research, training and extension education in crop husbandry, horticulture, animal husbandry, fisheries and agro-forestry. It supports more than 40 agricultural and veterinary universities, whereas most developing countries spread responsibility for research, training and education among different agencies and ministries.

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Once improved technologies have been developed by scientists, the experimental findings are tested in pilot fields before being recommended for widespread adoption. ICAR has developed the following methods of demonstrating and verifying new experimental findings: 'lab to land' and 'land to lab' programmes, which aim to extend new experimental findings to small farmers; national demonstrations designed to show that small farmers can achieve high yields; and whole-village or watershed operational research projects, which can help to identify the major constraints responsible for the gap between potential and actual farm yield and income.

Since illiteracy is still widespread in rural India, ICAR has organised a network of Farm Science Centres across the country for disseminating the latest technical skills through a 'learning-by-doing' scheme. Farmers often spend many hours visiting experimental fields and discussing problems with scientists seconded from universities and research centres.

The Fruits of Research

India's progress in wheat and rice production was possible only because it has a dynamic national research system with the capacity to liaise with international research centres like the International Centre for Maize and Wheat Improvement in Mexico.

To generate and sustain high yields of staple crops like wheat and rice, India has researched location-specific varieties and technologies to enable greater production in diverse parts of the country. The government's provision of adequate energy to pump water from tube wells has enabled the Punjab region, for example, to maintain high rice yields even in severe drought. Effective monitoring and early warning systems are also critical.

'Volunteers from agricultural universities and institutions should be on hand to offer technical assistance'

In India, both government and private agencies have been actively providing inputs such as seeds, fertilisers, irrigation water, pesticides and, importantly, credit. Public sector companies like the National Seeds Corporation and credit institutions like the National Bank for Agriculture and Rural Development have become important instruments for enabling small farmers to adopt new technologies.

Credit fairs are also highly useful in identifying input supply programmes so that small farmers have access to new technologies, fertilisers, seeds and other requirements. They also facilitate access to credit; organise the link between supply of credit and inputs; and bring small farmers into contact with representatives from the banks and input supply agencies. Volunteers from agricultural universities and institutions should also be on hand to offer technical skills training.

Farmers need to have a long-term stake in the land to make them invest in the infrastructure essential for sustained productivity. Security of tenure, land ownership patterns and the size of the farm holdings need particular attention. In Africa, livestock reform is also important, so that the cattle population remains within the supporting capacity of the ecosystem.

Input-output pricing policies also become crucial. The turning point in Indian agriculture took place in 1964, when the government set up a Prices Commission to recommend minimum prices for food grains in order to provide an incentive to farmers, and a Food Corporation, to ensure farmers received those prices. The government has honoured its

commitment to farmers by purchasing all surplus grain offered to government agencies.

The term 'symphonic agriculture' designates the evolutionary stage reached when all components of an agricultural action plan become mutually reinforcing. When synergistic packages of technology, services and public policies are developed and introduced in a mutually supportive manner, agricultural progress is rapid. Without adequate rural infrastructure such as roads, warehouses, electricity and facilities for education and health care, rural areas will not attract technically qualified people.

From Green to Ever-Green

In fact, the migration of educated and well-trained people from villages to towns is the most serious form of brain drain in most developing countries. In India, as in most developing countries, youth below the age of 21 constitute the majority of the population. Thus, the future of agriculture and of rural professions depends greatly on the government's ability to make agriculture both economically and intellectually attractive.

'The problem before us,' observes E O Wilson, 'is how to feed billions of new mouths over the next few decades and save the rest of life at the same time, without being trapped in a Faustian bargain that

threatens freedom and security. No one knows the exact solution to this dilemma. The benefit must come from an ever-green revolution. The aim of this new thrust is to lift food production well above the level obtained by the green revolution of the 1960s, using technology and regulatory policy

more advanced and even safer than those now in existence.' — M S Swaminathan, head of MS Swaminathan Research Foundation in India

'The future of agriculture and of rural professions depends on the government's ability to make agriculture attractive'

SPECIAL FEATURE

Israeli Farms Plough Path From Hoes to High Capital

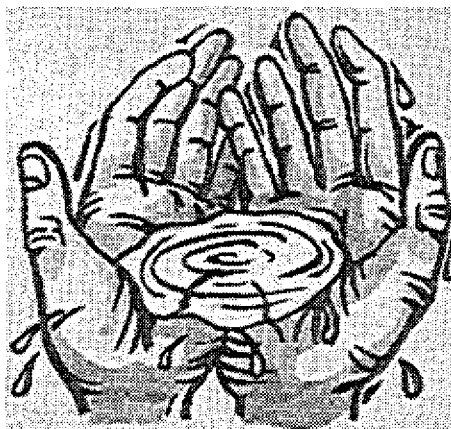
Israel provides a microcosm of the world's most pressing ecological conundrum: producing more food on less arable land with less water on a sustainable basis. The population has expanded six-fold in the past 50 years. In the 1960s, a farmer had to feed 17 people. Now he must feed 110. Despite the challenges of feeding a growing nation in arid and semi-arid conditions, Israel has maintained an average annual increase in agricultural produce of 5-6% and remains a competitive exporter of high-quality farm commodities. Its post-colonial experience is marked by relentless innovation in technology, farming practices, marketing strategies and social organisation. Based on his expertise as a senior agricultural consultant, Yitzhak Abt applies lessons from the history of Israel's agricultural development to Africa.

There is no short-cut to food security. It can only be attained if basic investments are made in water development, conveyance and distribution; in accelerated training of farmers/peasants; and in the organisation of supporting systems that can ensure timely delivery of farm inputs, storage facilities and market outlets.

The challenge for Africa is to adopt the many proven advances in irrigation practices, fertiliser application and crop protection methods. Without harnessing the agricultural, educational and environmental sciences, the continent will never see significant yield increases or overcome logistical obstacles to food distribution and storage. Nor will it cope effectively with the encroaching negative effects of climate change and human ecological interference. Continued insecure subsistence agriculture typified by rain-dependency, short-cycle crop rotation, and minimal input is totally unviable.

There are four main types of agricultural practice in most developing countries.

The first, **subsistence agriculture**, is the most problematic. Dependent on



rain rather than irrigation and practiced with hand implements, subsistence agriculture often yields only one crop a year. Because farmers at this level have access to very few inputs, they rely on crop rotation to replenish the soil. If the cycle of rotation is too short – which is increasingly the consequence of growing population pressures on rural lands – fertility and yields decline, exposing the farmer and his dependents to constant malnutrition. In many cases, such farming also accelerates desertification.

About 35% of Africa's active rural population exists on subsistence agriculture, a practice that is no longer sustainable in a world accelerating toward a population of nine billion. Unlike a century ago, when pressures on land and natural resources were relatively insignificant, subsistence agriculture today results in food insecurity and impoverishment. Consider a small illustration. One hectare of rain-fed maize cultivated only with hand implements requires about 150 labour days to harvest about one tonne of grain. A family of six persons will require about 1.8 tonnes per year of grain equivalent to survive. Therefore, to feed his family sufficiently, this subsistence farmer will need to put in 300 labour days every six

months cultivating two hectares. He will also need to stock up to 15% of his yield in reserves in case of drought, floods, and pest infestation. This family is constantly vulnerable.

Poor nutrition creates its own vicious circle. There seems to be a clear correlation between the level of food intake and the ability of peasant communities to break out of subsistence farming. The challenge, therefore, is to find ways of improving, first and foremost, nutritional levels in those populations. There are several strategies for doing this.

During its initial decade of independence, Israel faced the urgent task of feeding a predominantly subsistent society that was absorbing a rapid influx of migrants from central Asia, Europe and the surrounding region. The government set up cooperative villages to accelerate food production and rural development, focused public spending on irrigation extensions and national water infrastructure, and coordinated crop production to ensure a diversified national food basket. It also instituted an extension system to deploy experienced farmers as advisers in each village and tied credit to crops through a system that enabled lending facilities to recover money directly from cooperative marketing agencies.

Within eight years of independence, the country moved from scarcity to surplus, despite the refugee influx.

One effective approach that can be adopted quickly is work-for-food programmes. These accomplish three objectives at once: tap under-employed rural labour to improve the natural resource base of the community; meet the immediate nutritional needs of the people involved; and generate moderate capital to bring subsistence communities

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into the market economy.

In Israel, the government created an international programme to help subsistence communities in arid environments to build watersheds, incorporate soil replenishment techniques like mulching, and plant proven rain-fed crops, bushes, shrubs and trees of economic value. Such programmes can be organised either as public-works projects or as community-based activities financed from food donations.

Two other essential factors that states must provide are secure land tenure, which enable the rural poor to access credit for vital farm inputs, and a national research strategy to improve technologies, plant varieties and farming methods.

The second prevailing situation in African agriculture, which probably includes more than 40% of the continent's farm population, can be defined as **improved traditional agriculture**.

This situation is characterised by the practice of traditional crop production under a sedentary farm system that provides some land-tenure security. Often it is based on rain-fed conditions, but by applying partial irrigation facilities a second crop can be raised during the dry season.

Aside from providing partial irrigation facilities from an existing water resource, rain-harvest systems can be effectively used to enable double-cropping. Israel devised a system to irrigate with trapped rain water using an innovative, low-gravity pressure system. Cheaper than conventional drip irrigation and easy to install, this micro-irrigation technology is an excellent and critical step toward the gradual diversification of farming on small plots.

Towards Efficiency

The bulk of active farm population in this category is characterised by a significant reduction of hunger. But many suffer from poverty and lack of basic amenities. An important measure for enhancing production of this type of farming is to provide a financial and logistic system to supply critical inputs and an effective extension-delivery system. State provision of basic services like health care, primary

education and housing is essential. Community-driven agro-forestry and conservation programmes are equally critical.

The third situation of African agriculture, representing probably 15% of the active rural population, is **market-oriented diversification**. Farm populations practising a diversified basket of farm production are usually above basic food consumption needs.

The main thrust of this level of agriculture is to produce commodities for the national food basket. Urban demand usually dictates crop diversification, but production variety is also influenced by the availability of credit and extension delivery systems. Irrigation becomes vital to ensure both seasonal as well as out-of-season supply.

'Trapped rain water irrigation is an excellent step towards diversification of farming on small plots'

Diversified agriculture implies the intensification of land-use, which can generate employment opportunities both on the fields and in secondary post-harvest activities such as agricultural processing and market services.

The fourth situation, defined as **market-oriented specialised agriculture**, representing probably less than 10% of Africa's active farm population, involves producing farm commodities that respond to global tastes and demands. Commodities produced under progressive technologies with specialised post-harvest and marketing systems in selected African countries include tea, coffee, cocoa, bananas, pineapples, sugar, cotton and rubber.

This category of agriculture implies highly mechanised production methods and/or highly specialised labour, research-intensive practices, and well-developed market infrastructure. A key for specialised agriculture is advanced irrigation systems

that combine high-pressure water and fertiliser applications through an integrated system. Other specialised applications include greenhouses and the eradication of soil pathogens through solarisation of soils. Specialised agriculture must go hand in hand with advanced seed production enterprises.

Minimising Risk

Market-oriented specialised agriculture requires levels of investment per worker similar to those required in the medium-level industrial sector. The risks on investments are often higher than those in other industries, however, due to climatic and biological uncertainties. A challenge of contemporary specialised agriculture is to widen the participation of the farm community to generate job growth in tangential industries. One answer to this problem is contract farming, whereby commercial agricultural enterprises enter into contract with smallholders to produce the same commodity with the necessary technical assistance and market services.

There are clear indications that peri-urban agricultural development is gaining currency in Africa. We can expect that perishable farm commodities will be grown as near as possible to the urban centres even if such areas will eventually become fully urbanised. The heaviest farm investments in protected agriculture will therefore most likely be located on the periphery of cities.

The vicious circle of subsistence agriculture can and must be broken. This transition implies a range of agro-ecological and environmental challenges. Support services become more complex as agriculture progresses from subsistence to market-oriented specialised agriculture. Systems must be developed for recycling of marginal water, the reduction in the use of chemicals, and the installation of modern post-harvest marketing infrastructure. But there is no alternative. In an age of economic globalisation, critical population mass, and increasing scarcity of land and water, highly specialised agriculture is the only sustainable way forward. ■

SPECIAL FEATURE

Two Farm Better Than One

Unity between commercial and emerging farmers succeeds where governments fall short

SELBY Vorster is a white commercial cattleman, George Nqoko a black rural pastoralist. Both come from the district of Elliot in South Africa's Eastern Cape province. The two men spent most of their lives separated by apartheid's barrier of differentness and distrust. But in this new era – with all of its intertwined social, political, business, and environmental imperatives – the two men have made a vital discovery: They need each other.

'Land reform can actually turn out to benefit us all,' Vorster said.

In countries such as South Africa, Zimbabwe, Kenya and Mozambique, collaboration among commercial and emerging farmers is gaining momentum. The benefits are numerous. Black farmers gain agricultural expertise and easier access to vital farm inputs that government land reforms often fail to provide. Commercial farmers get much-needed new allies against scourges like stock theft.

Working together eases social divisions within communities and enables farmers to coordinate responses to ecological challenges like water scarcity, soil erosion and pest infestations.

Importantly, the idea seems to work best without government interference. Well before the political clamour for land reform reached fever pitch in Zimbabwe, many white commercial operators in different pockets of the country had formed programmes to develop aspiring black farmers – providing land, inputs, equipment, financial infrastructure and expertise at their own expense.

What It Really Takes

Not only has Robert Mugabe's violent farm acquisition programme destroyed such initiatives, his government has provided almost no assistance to blacks who have resettled lands taken from whites.

Responding to land redistribution pressures in South Africa, Vorster and other

commercial farmers in the area started the Ekhowa Development Centre Co-operative, which attempts to promote a holistic approach to commercial agricultural practices among small-scale farmers.

'This kind of collaboration has the ability to bridge the gap between emerging and commercial farmers and ensure that there is a constructive working relationship,' said President Thabo Mbeki of the centre. 'It has become a model of black and white cooperation and a beacon of hope for many formerly desperate rural people.'

The centre has two major community projects. One focuses on cattle. The second trains women in larger-scale production of cabbages.

Nqoko, chairman of the Elliot Commonage Association and a member of the centre, conceded that it took some time for emerging farmers to overcome their scepticism. 'When we started meeting white farmers like Selby through the cooperative, we were very surprised to see that they actually wanted to help us in our farming venture,' he said.

But as time went on, the benefits of collaboration erased old racial suspicions. 'Living in a township we've always had cattle, but we never knew how to best manage them in a more profitable way,' Nqoko said. 'This is an opportune moment to get more knowledgeable.'

Jackson Munde, whose cattle also graze on the commonage, agreed. 'Our calves now become strong and big cattle,' he said. 'I am proud of this initiative, especially because it brings together black and white in our community.' The centre provides black farmers with treatments for pests like roundworms and tapeworms.

White commercial farmers in South Africa have also organised training programmes through the newly establishing Foundation for Farmers' Development.

Gideon Morulé, who represents the

National African Farmers Union at the Foundation, says the FFD is a critical remedy for the state's shortcomings. 'Our major interest in the FFD is to receive training and skills transfer, in order to increase production and build capacity,' he said. 'Government training is in most cases wanting and outdated and most of the extension officers are indifferent towards organisations because they feel threatened by their little knowledge as farmers.'

Encouraging Teamwork

Collaboration in Kenya strives for similar objectives. 'In Kenya it is a question of large-resource farmers who help the less-resourced farmers,' said Bernard Kitheka, agricultural counsellor in the Kenyan embassy in South Africa. 'We have large cut-flower farmers who reach out to small-scale farmers. They would encourage small-scale farmers to grow flowers and then they would buy from them. This really helps small-scale farmers reach international market easily.'

In Mozambique, meanwhile, the government has neither the capacity nor the structure to promote research, extension services, agricultural production, irrigation, land, forestry or wildlife conservation. To respond to these shortcomings, the state has sought measures to enable and encourage the private sector to develop production and export strategies.

Back in the Eastern Cape, the Ekhowa cooperative is compiling a database to facilitate mentorships between white commercial and emerging black farmers.

'There must be no guesswork when emergent and commercial farmers work together – practical interaction is the only way to go,' Vorster said. 'We have to work together to keep our heads above the water. For commercial farmers, stock theft and crime will be minimised by such joint ventures, as they lead to increased production and job opportunities within our communities.' – **Victor Mahlangu**